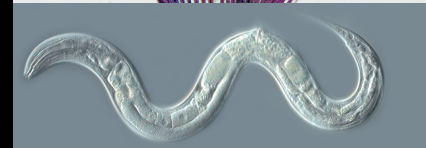
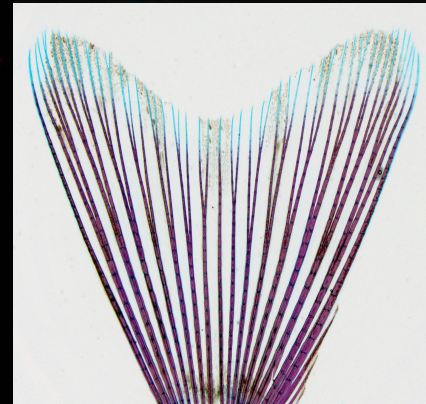
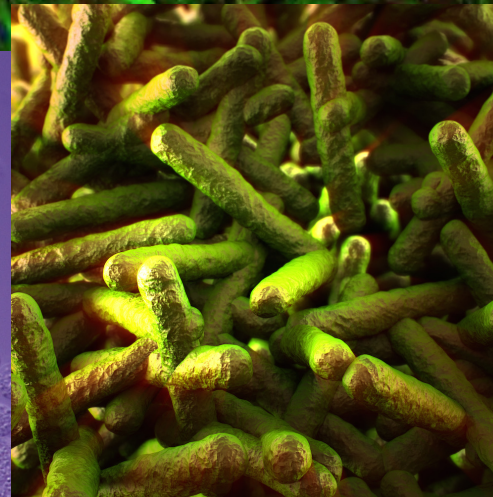
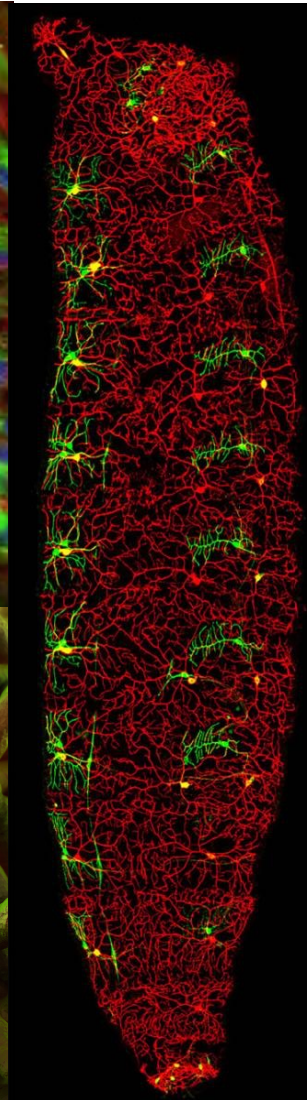
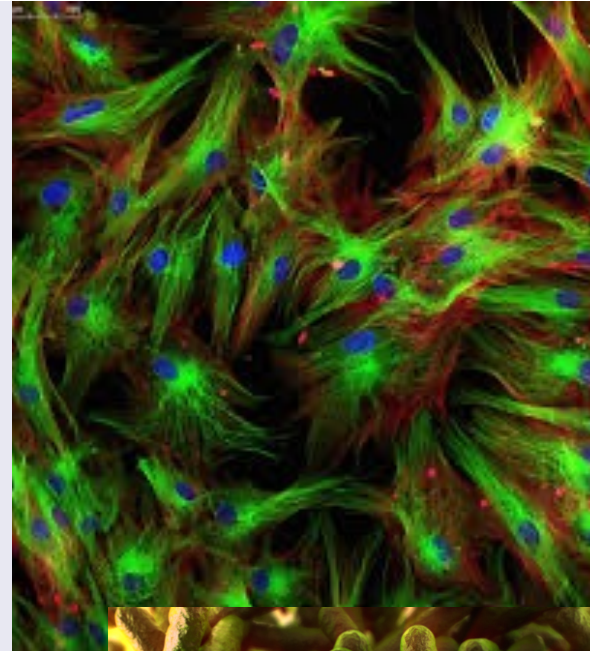
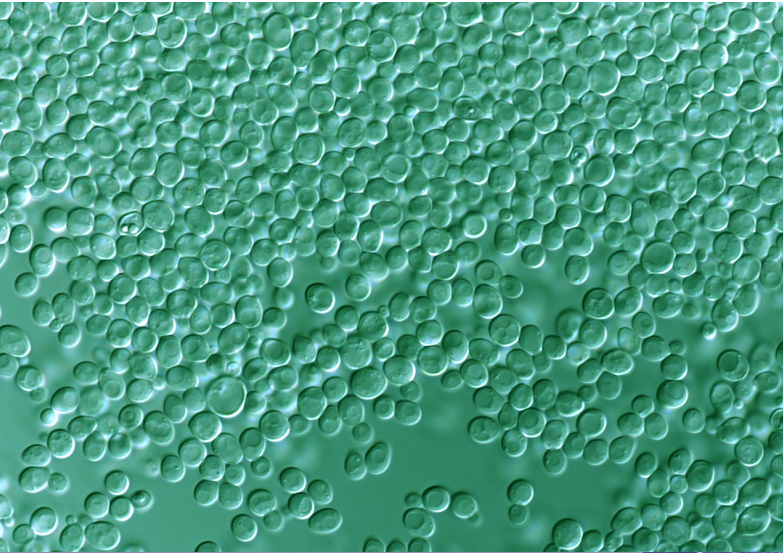


# Master studies in Biology



# Masterdays 2024, BIOLOGY

## Programme:

<b>17.00 - 17.20</b>	<b>Introduction to Biology Master programs*</b>
<b>17.20 - 17.40</b>	<b>MSc in Environmental Biology*</b>
<b>17.40 - 18.00</b>	<b>MSc in Molecular Life and Health Sciences*</b>
<b>18.00 - 18.40</b>	<b>MSc in Bioinformatics and Computational Biology*</b>

\* Dr Alessandro Puoti (Study advisor Biology and Biochemistry)

\* Prof. Laure Weisskopf

\* Prof. Daniel Wegmann

Department of Biology  
Chemin du Musée 10  
Laboratoire 0.325 (PER 05)  
1700 Fribourg

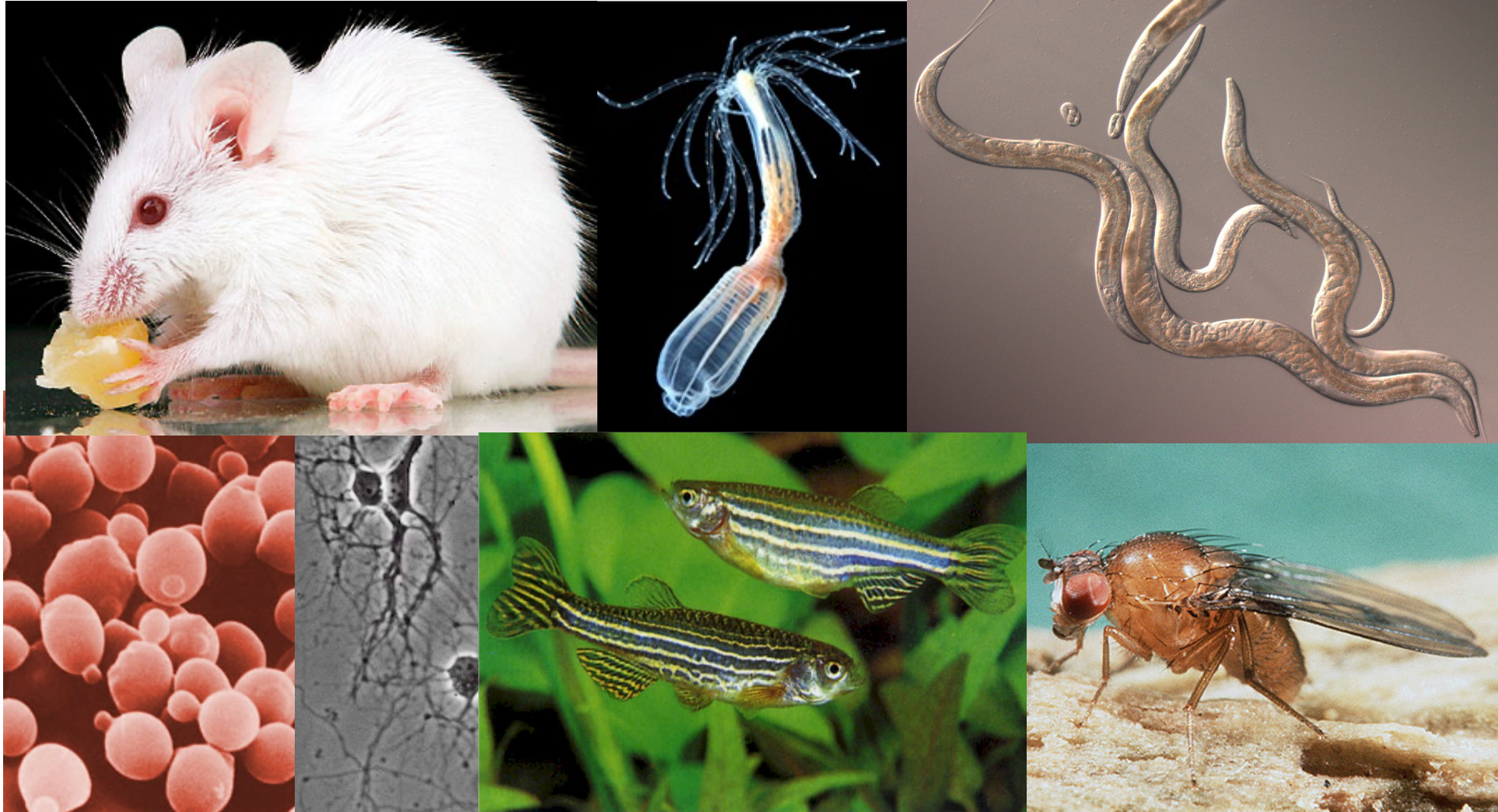
email: [alessandro.puoti@unifr.ch](mailto:alessandro.puoti@unifr.ch)

Tel: 026 300 8878

# The Department of Biology

Biochemistry

“Zoology”

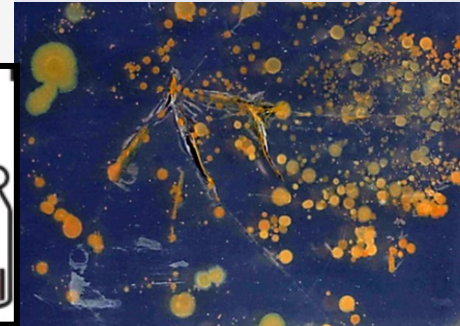
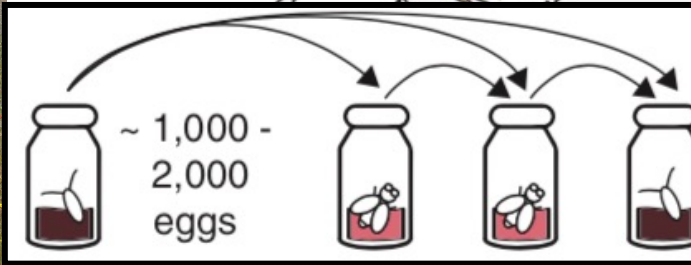


“MSc in Molecular Life and Health Sciences”

# The Department of Biology

Ecology and Evolution

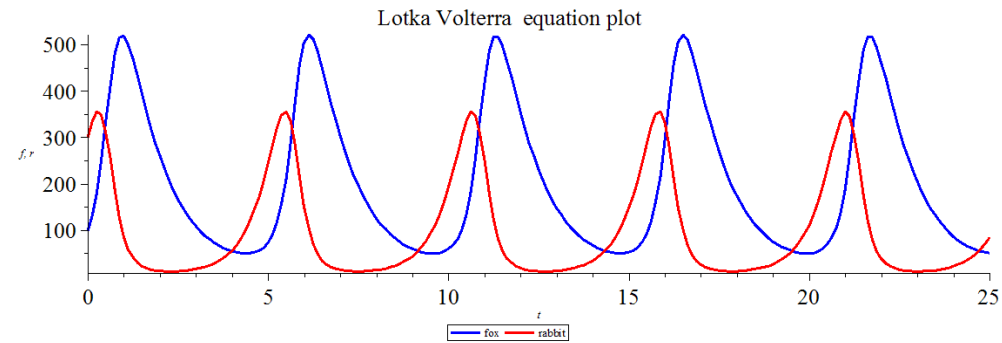
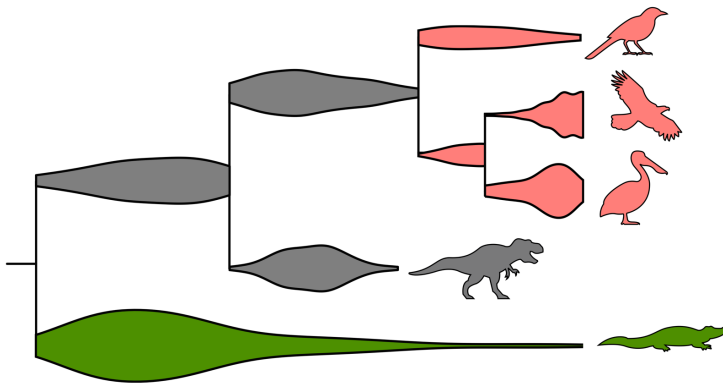
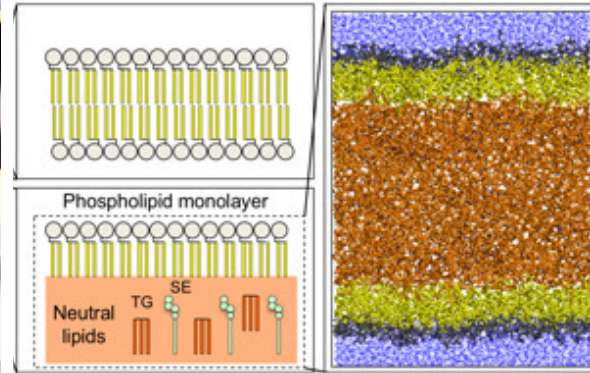
Plant and Microbial Sciences



“MSc in Environmental Biology”

# The Department of Biology

## Bioinformatics, Modelling, and Biomathematics



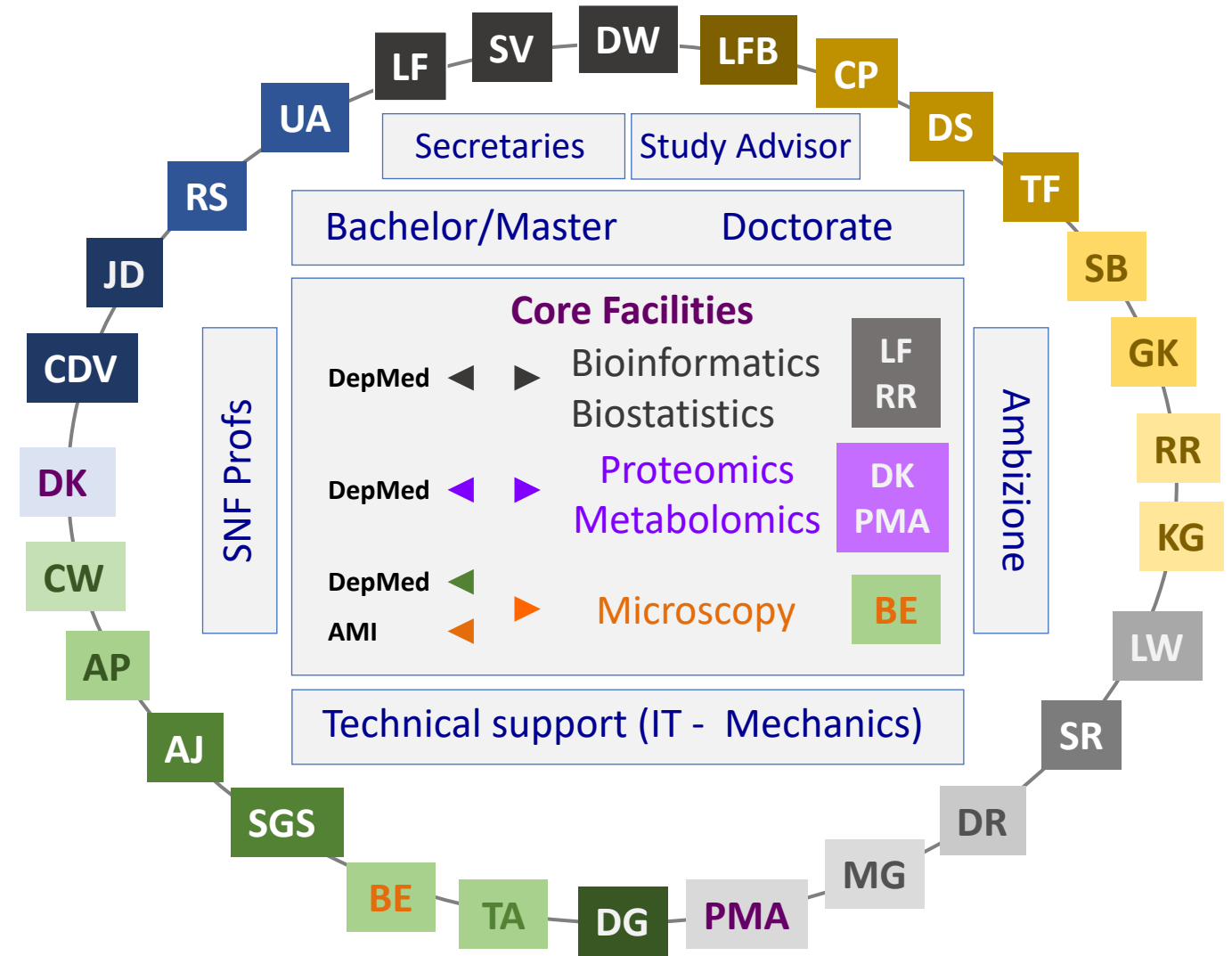
“MSc in Bioinformatics and Computational Biology”

# Structure of the Department of Biology

28  
Independent  
research groups

4  
Technical platforms

- Bioinformatics
- Evolution
- Ecology
- Plant-Microbe Interactions
- Cell Biology
- Neurobiology
- Developmental Biology
- Biochemistry
- Molecular Biology
- Genetics



# Research activities of the Department of Biology

## Research domains

Autophagy  
Cell differentiation  
Growth control  
Biochemistry  
Biosynthesis  
Molecular interactions  
Regulatory pathways  
Community ecology  
Conservation biology  
Evolution  
Interactions between organisms  
Environment  
Microbiology  
Control of gene expression  
Neurobiology  
Regeneration  
Biological clocks  
Behaviour  
Marine Biology  
Epigenetics

## Methodologies/Tools

Molecular Biology  
Histology  
Microscopy  
Cell culture  
Proteomics  
Phospho-proteomics  
Optogenetics  
Genome editing  
Metabolomics  
Cell Biology  
Bioinformatics  
Field work  
Statistics  
Modelling  
Forward and reverse genetics  
Classical model organisms  
New model organisms

## Applications

Basic knowledge of Life  
Molecular medicine  
Industrial biotechnology  
Transmission of knowledge  
Applied research  
Gov. / non-gov. offices

# Our Department's Master programmes

Today:

**Research MSc in Molecular Life and Health Sciences, 120 ECTS**

Master thesis 60 ECTS

**Teaching MSc in Molecular Life and Health Sciences, 90 ECTS**

Master thesis 45 ECTS

17.40 – 18.00

A. Puoti

**Research MSc in Environmental Biology, 120 ECTS**

Master thesis 60 ECTS

**Teaching MSc in Environmental Biology, 90 ECTS**

Master thesis 45 ECTS

17.20 – 17.40

L. Weisskopf

**MSc in Bioinformatics and Computational Biology, 120 ECTS**

Master thesis 45 ECTS

18.00 – 18.40

D. Wegmann

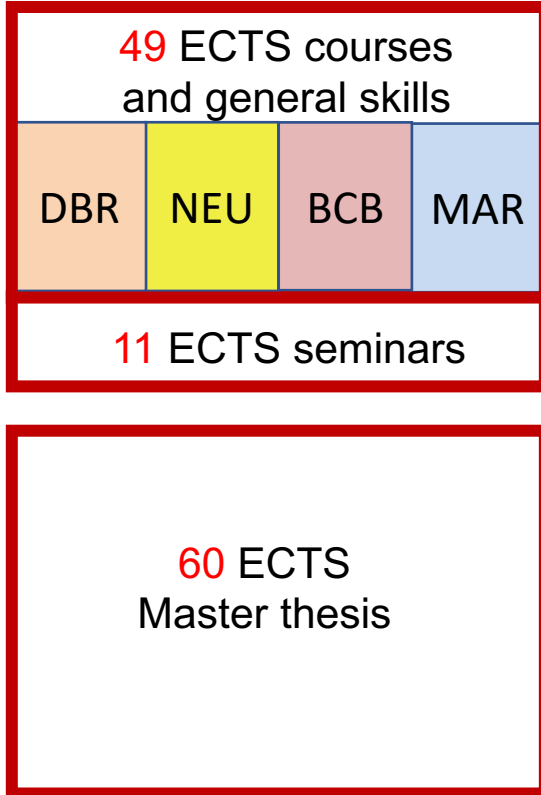


# Structure of our Biology MSc Programmes

## MSc in Molecular Life and Health Sciences

4 options

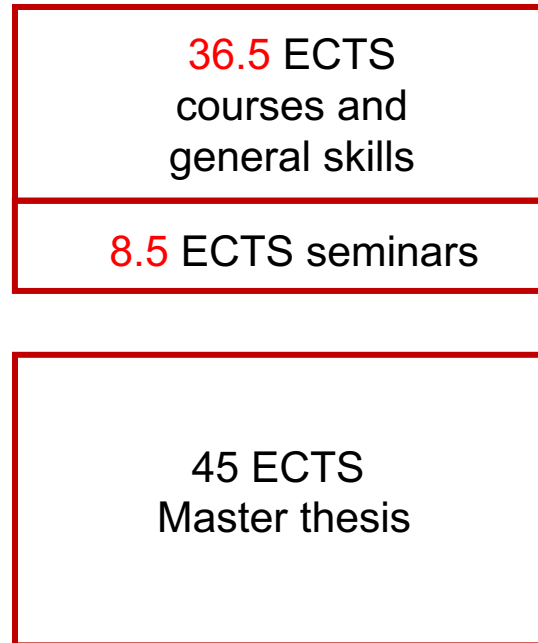
**120** ECTS



## MSc in Molecular Life and Health Sciences

Teaching

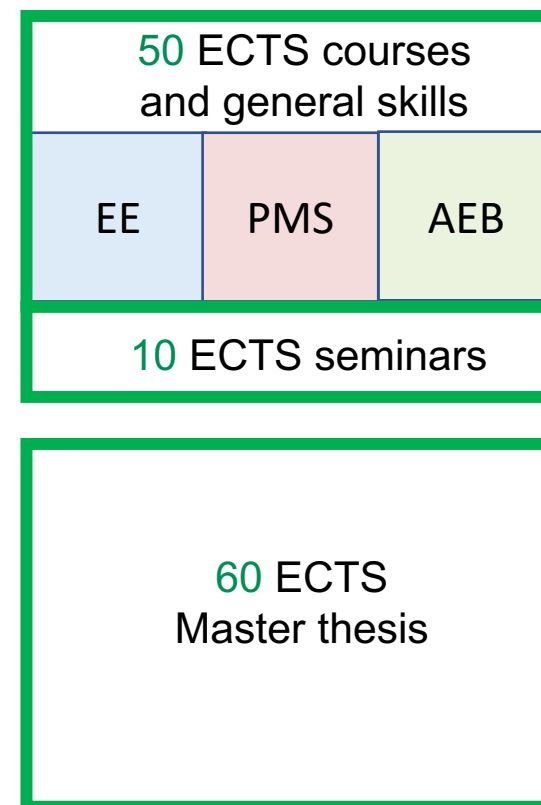
**90** ECTS



## MSc in Environmental Biology

3 options

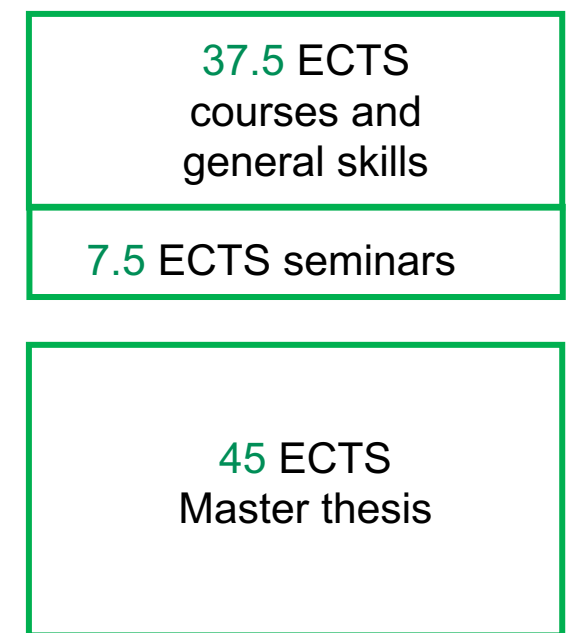
**120** ECTS



## MSc in Environmental Biology

Teaching

**90** ECTS



DBR : Developmental Biology and Regeneration

NEU: Neurobiology

BCB: Biochemistry and Cell Biology

MAR: Marine Biology

EE : Ecology and Evolution

PMS: Plant and Microbial Sciences

AEB: Applied Environmental Biology

# General skills

SBL.00504	Basics in Biostatistics	(Fall, 1.5 ECTS)
SBL.30001	Introduction to R	(Fall, 2 ECTS)
SBL.00431	Seminars in Biology	(all, 2 ECTS)
Various	<b>Scientific English for MSc students</b>	(all, max 6 ECTS)

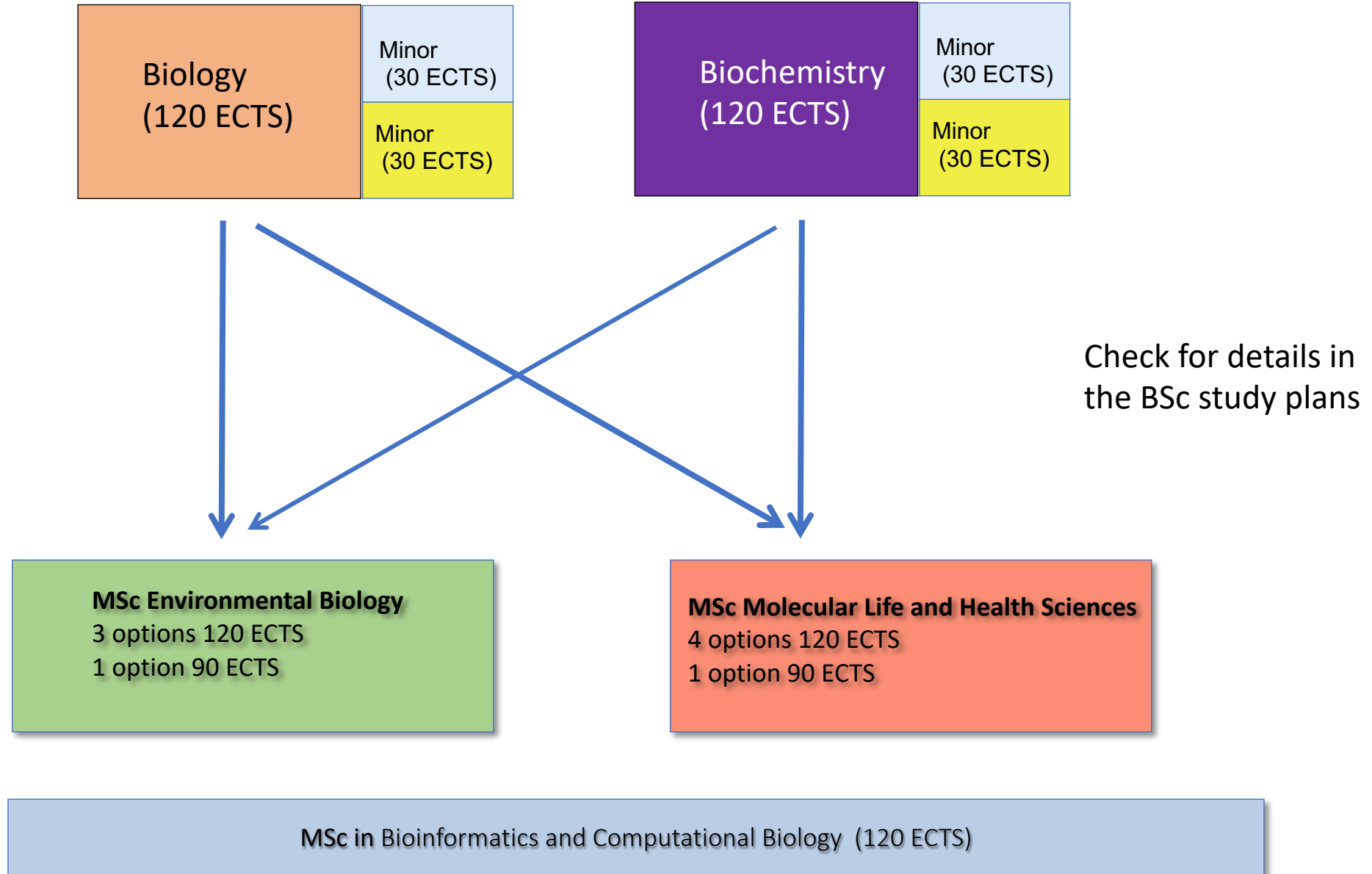
plus, depending on the option:

SBL.00427	Visual communication of data	(Spring, 1 ECTS)
SBL.10004	Ethics in stem cell research	(Spring, 1 ECTS)
SBL.10001	Modelling human disease in experimental model organisms	(Spring, 2 ECTS)
SBL.10002	From bench to bedside	(Spring 0.5 ECTS)
SBL.10100	Journal club in molecular life sciences	(all, 3 ECTS)
SBL.20005	Critical reading	(Fall + Spring, 3 ECTS)
SBL.00410	Scientific writing	(Fall, 3 ECTS)
SBL.20001	Biostatistics I	(Fall, 3 ECTS)
SBL.20002	Biostatistics II	(Fall, 3 ECTS)

# Technical skills

SBL.00125	Light and fluorescence microscopy	(Fall, 3 ECTS)
SBL.10013	Zebrafish license course (practical)	(all, 1 ECTS)
SBL.20003	Methods in plant pathogen interactions	(Fall, 2 ECTS)
SBL.20004	Introduction to metabolomics	(Spring, 2 ECTS)
SBL.00419	Advanced imaging	(Spring, 1 ECTS)
SBL.00451	Introduction to mass spectrometry and proteomics	(Fall, 1 ECTS)
SBL.00452	Advanced quantitative proteomics	(Spring 2 ECTS)
SBL.06002	Classical models in biology (with exercises)	(Fall, 3 ECTS)
SBC.04203	Genotyping	(Fall, 2.5 ECTS)
SBC.07110	Introduction to UNIX and BASH	(Fall, 2.5 ECTS)
SBC.07107	Bioinformatics	(Fall, 3 ECTS)
SBL.05001/2	Master thesis (including research seminars)	(45 / 60 ECTS)

# Admission with a BSc from UniFr



# Admission with a BSc from another University

## MSc in Environmental Biology

BSc in Biology, BSc in Biochemistry, or equivalent

Prerequisites (may vary, depending on the option):

- Vertebrates
- Invertebrates
- Botanics
- Comparative anatomy
- Microbiology
- Ecology
- Evolution
- Statistics
- Plant physiology
- Animal physiology
- Molecular biology
- Population genetics
- Laboratory and communication skills

## MSc in Molecular Life and Health Sciences

BSc in Biology, BSc in Biochemistry, or equivalent

Prerequisites (may vary, depending on the option):

- Cell Biology
- Biochemistry
- General and organic chemistry
- Microbiology
- Methods in molecular biology
- Methods in biochemistry
- Animal physiology
- Molecular biology
- Developmental biology
- Neurobiology
- Genetics
- Laboratory and communication skills

# Get informed about our Biology Master programmes

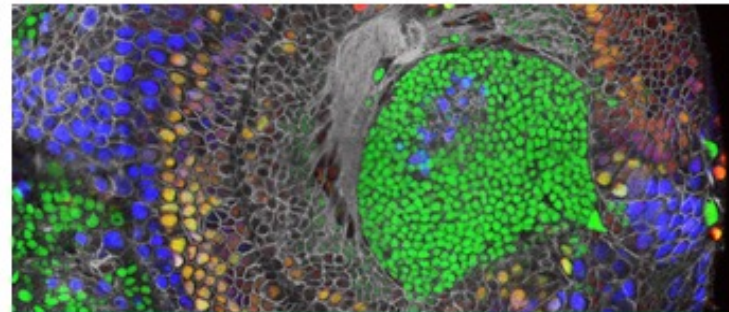
The University of Fribourg offers multidisciplinary study programmes leading to the degree of Master of Science:

- **Master in Environmental Biology**
- **Master in Molecular Life and Health Sciences**
- **Master in Bioinformatics and Computational Biology**

The programmes consist of 120 ECTS credits and correspond to 24 months of full-time study. English is the principal language for all activities, but students can take their exams in English, French or German.



**MSc in Environmental Biology**



**MSc in Molecular Life and Health Sciences**



**MSc in Bioinformatics and Computational Biology**

<https://www.unifr.ch/bio/en/studies/master/>



## Master in Environmental Biology

Major environmental problems, in particular global change and its consequences for biodiversity and ecosystem functioning, are intimately interconnected and pose a threat to our future. Solving these problems requires an integrative and synergistic approach in terms of both fundamental and applied research.

The Department of Biology of the Faculty of Science and Medicine offers a multidisciplinary **Master of Environmental Biology**. The program ranges from fundamental concepts in **ecology and evolution, molecular aspects of plant and microbial sciences to applied solutions for environmental policies and sustainable development**. It provides students with state-of-the-art training and background in conceptual, technical, and applied aspects of environmental biology, from genes to ecosystems.

Master students are integrated into active research teams and can thus gain extensive experience in basic and applied academic research in environmental biology. Students will have the opportunity to choose between four options. English is the official language for all activities.

### Available options

1. **Ecology and Evolution** | 120 ECTS
2. **Plant and Microbial Sciences** | 120 ECTS
3. **Applied Environmental Biology** | 120 ECTS
4. **Teaching** | 90 ECTS

**Degree Conferred**  
Master of Science  
in Environmental Biology

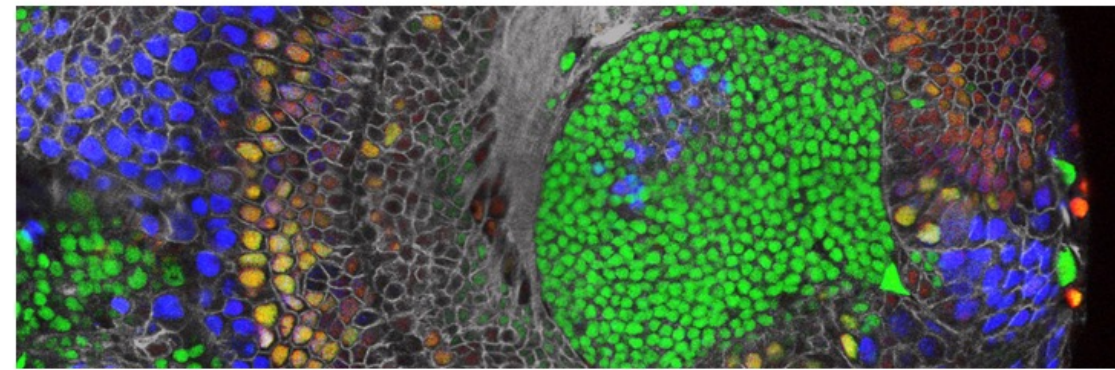
**Language(s) of Study**  
English

**Programme Structure**  
120 ECTS credits  
4 semesters  
or

90 ECTS credits  
3 semesters full-time

**Programme Start**  
September or February

**Student Advisor**  
Dr Alessandro Puoti  
bio-scimed@unifr.ch



## Master in Molecular Life and Health Sciences

Molecular mechanisms govern the fate and the function of every cell, from archaea living in the remotest trench in the ocean, to the highly connected cells of our brain. Interestingly, cells of various origins share common genes, and therefore use similar proteins and molecular pathways. These can be explored in a variety of model organisms and cultured cells, which you will discover in this exciting Master programme that bridges fundamental molecular science and potential applications to understanding human health and disease.

The Department of Biology of the Faculty of Science and Medicine offers a multidisciplinary study programme leading to the degree of

### Master of Science in Molecular Life and Health Sciences

with four research options.

The programme consists of **120 ECTS credits** and corresponds to **24 months of full-time study**.

Students aiming at becoming **high school teachers** and having to acquire 30 additional ECTS credits in a different study domain, can choose the **option "Teaching"** consisting of 90 ECTS (18 months).

### Available options

1. **Developmental Biology and Regeneration** | 120 ECTS
2. **Neurobiology** | 120 ECTS
3. **Biochemistry and Cell Biology** | 120 ECTS
4. **Marine Biology** | 120 ECTS
5. **Teaching** | 90 ECTS

**Degree Conferred**  
Master of Science in Molecular  
Life and Health Sciences

**Language(s) of Study**  
English

**Programme Structure**  
120 ECTS credits  
4 semesters full-time  
or  
90 ECTS credits  
3 semesters full-time

**Programme Start**  
September or February

**Student Advisor**  
Dr Alessandro Puoti  
bio-scimed@unifr.ch

**Additional Information**  
→ [Regulations](#)

[Apply for Admission](#) →

Application deadline (Fall semester) : April 30<sup>th</sup> (late admission : August 31<sup>th</sup>)

# Get informed about Biology Master programmes at UniFr

**UNI FR**  
UNIVERSITÉ DE FRIBOURG  
UNIVERSITÄT FREIBURG

## Master in Environmental Biology

Department of Biology

FACULTY OF SCIENCE AND MEDICINE  
DEPARTMENT OF BIOLOGY  
CH, DU MUSÉE 10, CH-1700 FRIBOURG

## Info booklets

**UNI FR**  
UNIVERSITÉ DE FRIBOURG  
UNIVERSITÄT FREIBURG

## Master in Molecular Life and Health Sciences

Department of Biology

FACULTY OF SCIENCE AND MEDICINE  
DEPARTMENT OF BIOLOGY  
CH, DU MUSÉE 10, CH-1700 FRIBOURG

→ Masterweek online talks

Study Plan

↓ [Study Plan of the Master in Environmental Biology](#)

Weekly schedule

↓ [Schedule Autumn Semester \(ver. 26.05.21\)](#)

↓ [Schedule Spring Semester \(ver. 12.11.21\)](#)

Additional Information

→ [Regulations](#)

Apply for Admission →

Masterweek documents

↓ Info booklet

↓ General information

↓ EB Master (to follow)

→ Masterweek online talks

Study Plan

↓ [Study Plan of the Master in Molecular Life and Health Sciences](#)

Weekly schedule

↓ [Schedule Autumn Semester](#)

↓ [Schedule Spring Semester](#)

Masterweek documents

↓ Info booklet

↓ General information

↓ MLHS Master (to follow)



# Language courses

We do not require a language test for admission, but students must at least be able to read and understand English.

Most students greatly improve their English and communication skills during the Master.

Our Master students often take:

| SA-2020 | UE-I04.00012

**B2 - C1 Academic English for Master's Students: presentation, discussion and team-working skills**

📅 Mardi 13:15 - 15:00

👤 Schaller-Schwaner Iris

🗣️ Anglais

<https://www.unifr.ch/centredelangues/en/courses/students/>



UNIVERSITÉ DE FRIBOURG  
UNIVERSITÄT FREIBURG

Language Centre

Home Centre **Language Courses** Self-Learning Bilingue Plus Tests & Certificates

🏠 Language Courses · **Language Courses for all Students**

## Language Courses

For all Students

French

German

English

Italian

Registration

For Employees

For Students in the Faculty of Law

Intensive Courses

Testimonials



## Language Courses for Students from all Faculties

If you are studying at the University of Fribourg and would like to attend a language course, the Language Centre offers courses in **French, German, English** und **Italian** at levels A1 to C2. Attending these language courses is **free of charge**.

French

See the courses →

German

See the courses →

English

See the courses →

Italian

See the courses →

[Participation, Registration, Deadlines and Dates →](#)

# Courses in Bern and Neuchâtel

## BeNeFri

### Legal basis

All the BeNeFri network details are available on the University [rules and regulations web page](#).

### Registration

Registration requests to BeNeFri courses must be submitted on the [MyUnifr](#) portal within the following deadlines:

- Autumn semester: **30 September**
- Spring semester: **28 February**

❗ Registrations are valid for **one semester only**. You will therefore have to reregister for each semester if you wish to remain registered with the BeNeFri network.

<https://www3.unifr.ch/studies/en/organisation/administrative-services-unifr-students/benefri.html>

# Why continuing with a Master?

After the Bachelor, the Master is your second step towards becoming a biologist/biochemist

- Use the knowledge acquired during the Bachelor
- explore a more specialized topic
- acquire independent and creative thinking
- learn how to communicate and present your results
- learn how to write a scientific paper in English
- learn how to have a critical approach of your and other's results
- organize yourself in planning experiments

The duration of the **120-ECTS** Master (Research options) is 4 **semesters**, including 1.5 years full-time dedicated to the thesis / laboratory work.

For a **90-ECTS** Master (Teaching options), the duration is 3 **semesters**, including 1 year full-time dedicated to the thesis / laboratory work. This option is specifically designed for future **teachers at secondary level II**.

# Perspectives with a Master degree in Science

The Master widens your job opportunities. Your next step might be in...

- starting a PhD
- working or being trained in a pharmaceutical company
- working as a lab manager in an academic research laboratory
- working as a salesperson
- working in patent offices, funding agencies
- working in regulatory affairs (GO and NGO)
- becoming a medical analyst (FAMH)
- getting a teaching diploma (DEEM / LDM)

One year after having obtained a MSc from UniFr:

93.4 % are active in sciences, including 4.9 % in search of an employment  
6.6 % are inactive in sciences. (family, travelling, other studies,...)

# Timeline (120 ECTS programmes)

## Semester 1

- Take as many classes as possible (Master courses, complements)
- Start looking for a laboratory
- Follow the seminars (mandatory)

## Semester 2

- Start the laboratory work
- Start organizing the written Master's thesis, literature searches
- Take the mandatory classes offered in the Spring semester
- Take complementary courses, if this applies
- Follow the seminars, give your first progress report

## Semester 3

- Carry on your laboratory work. New questions? New perspectives?
- Read and organize the literature related to your thesis project
- Seminars: mandatory presentations (progress report, Journal club)
- Take additional classes

## Semester 4

- Carry on and bring your laboratory work to an end
- Finish writing the Master thesis (50-100 pages)
- Take remaining classes
- Prepare and present the Master thesis defense (30 minutes).

# Timeline (90 ECTS programmes)

## Semester 1

- Take as many classes as possible (Master courses, minor)
- Start looking for a laboratory
- Follow some mandatory seminars

## Semester 2

- Start the laboratory work
- Start organizing the written Master's thesis. Literature study.
- Take the mandatory classes offered in the Spring semester
- Take complementary courses
- Take courses for the 30-ECTS minor
- Follow the seminars, give your first progress report

## Semester 3

- Carry on and bring your laboratory work to an end
- Read and organize the literature related to your thesis project
- Seminars: mandatory presentations (progress reports, recent publications)
- Finish writing the Master thesis (50-100 pages)
- Take remaining classes, if this applies
- Prepare and present the Master thesis defense (30 minutes).